

FIG. 1

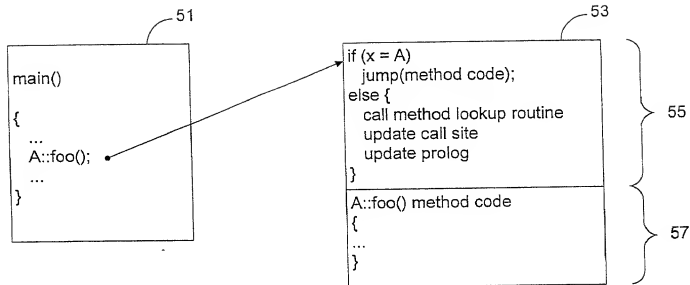


FIG. 2

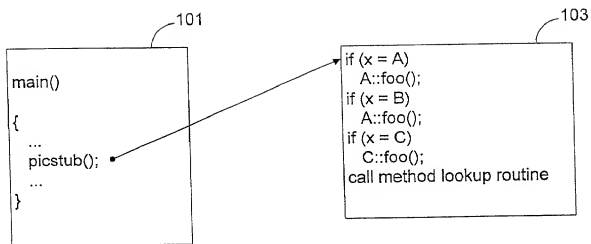


FIG. 3

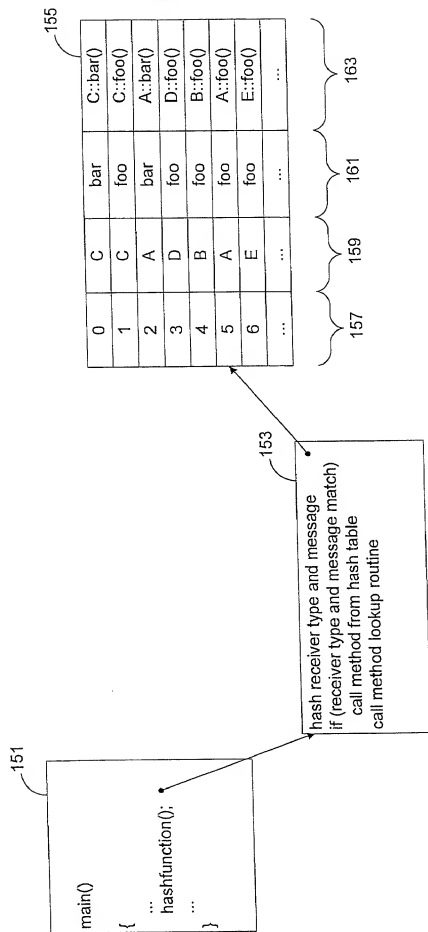


FIG. 4

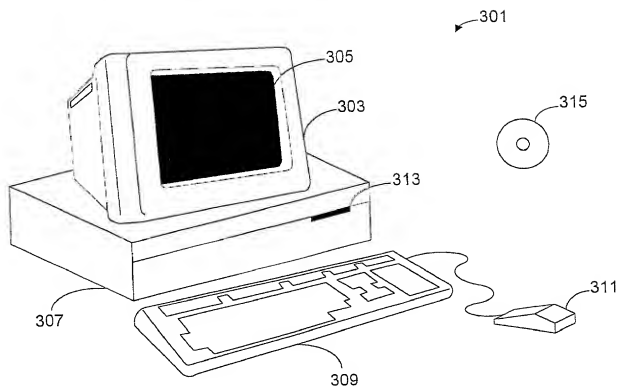


FIG. 5

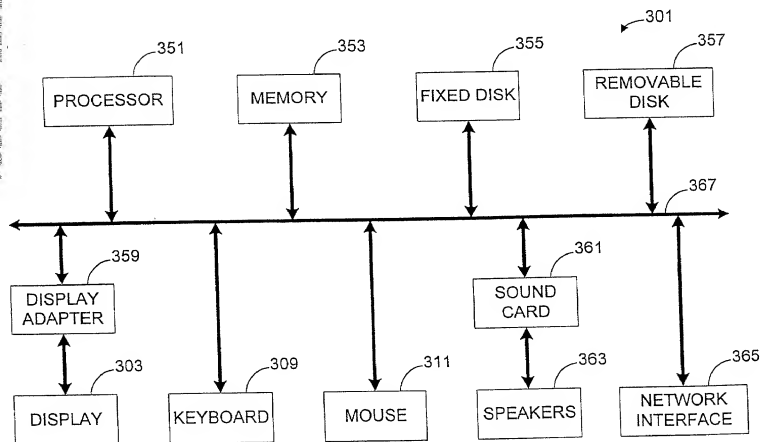


FIG. 6

INPUTS/OUTPUTS

EXECUTING SOFTWARE/SYSTEMS

401

JAVA SOURCE CODE

```
public class HelloWorld {
    public static void main (String args[]) {
        System.out.println("Hello World!");
    }
}
```

405

JAVA CLASS FILE

```
CA FE BA BE 00 03 00 2D 00 20 08 00
1D 07 00 0E 07 00 16 00 07 00 1E 07
00 1C 09 ... 00 02 00 18
```

403

BYTECODE
COMPILER

407

JAVA VIRTUAL
MACHINE
(INTERPRETER)

FIG. 7

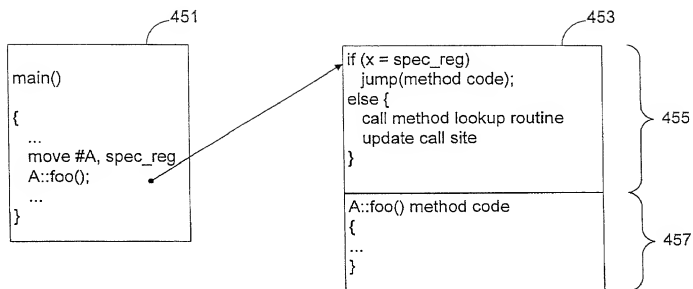
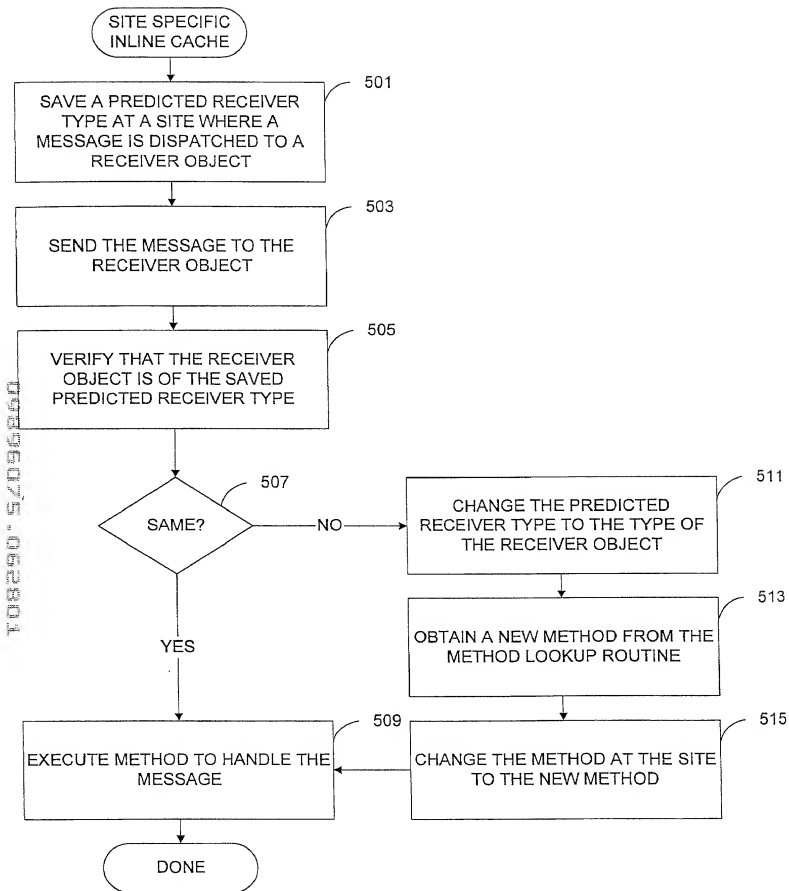


FIG. 8



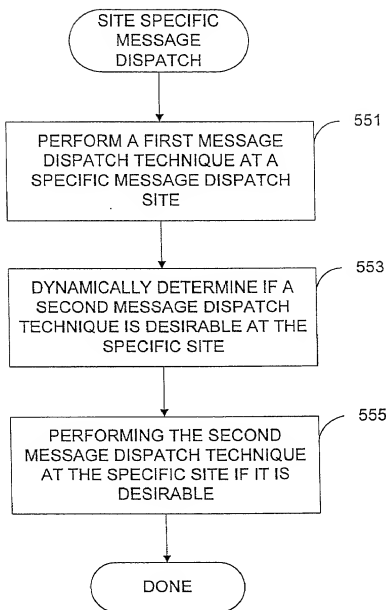


FIG. 10

09296075.062801

DYNAMICALLY
DETERMINING

DISPATCHING MESSAGES TO NOP
INSTRUCTIONS PRECEDING A
METHOD

COUNT THE NUMBER OF
DIFFERENT RECEIVER TYPES BY
THE NOP INSTRUCTIONS

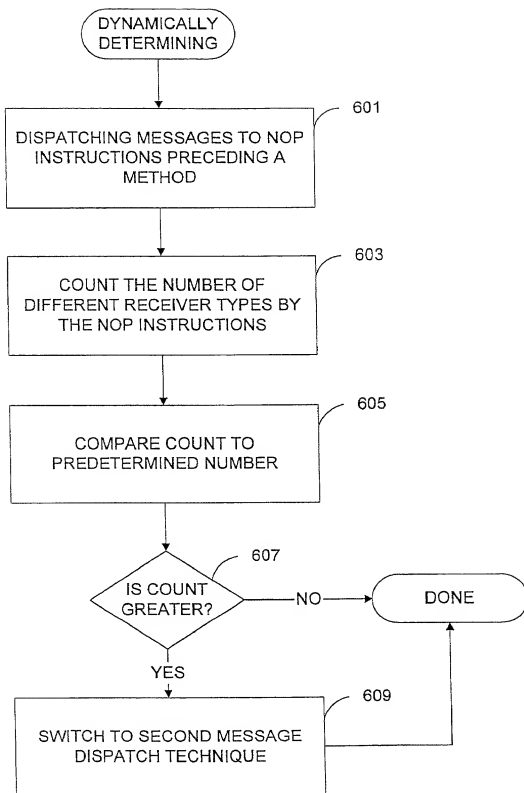
COMPARE COUNT TO
PREDETERMINED NUMBER

IS COUNT
GREATER?

DONE

SWITCH TO SECOND MESSAGE
DISPATCH TECHNIQUE

FIG. 11



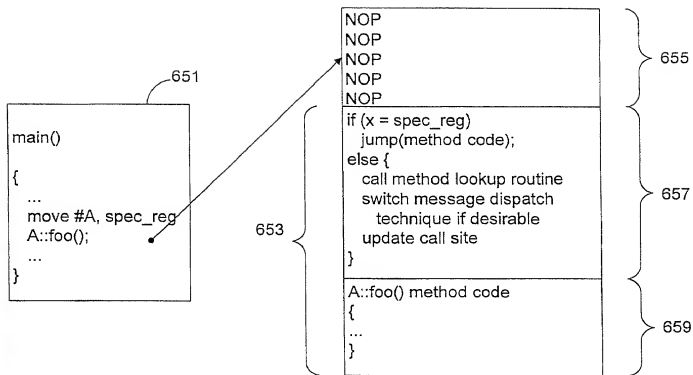


FIG. 12

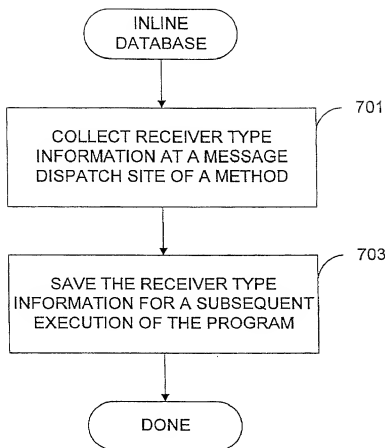


FIG. 13

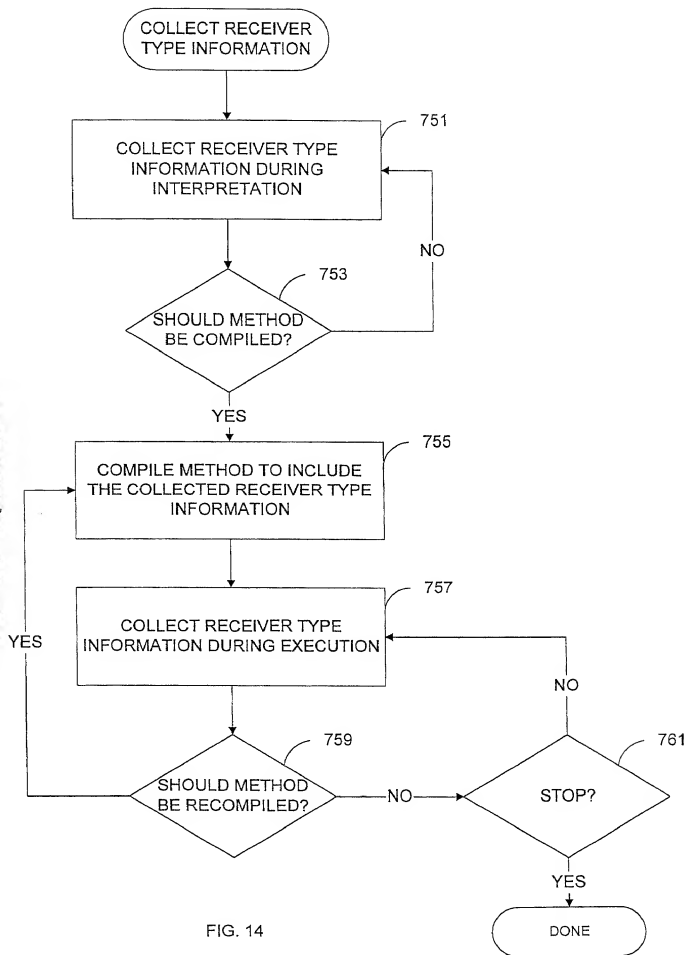


FIG. 14

09896075-062801

801

```
main()
{
...

/* call site for x.foo(); */
if (x = A)
    A::foo();
if (x = B)
    A::foo();
if (x = C)
    C::foo();
call method lookup routine

...
}
```

FIG. 15

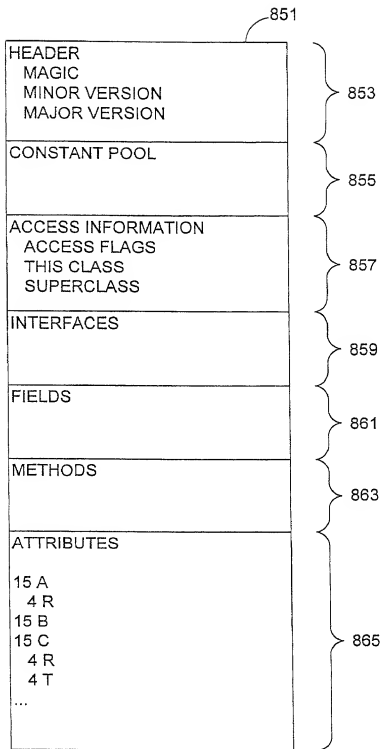


FIG. 16